CHARLES DARWIN UNIVERSITY

Family Name	
Given Names	
Student Number	
Teaching Period	Semester 2, 2015

FINAL EXAMINATION	DURATION
STA101 – Statistics 1	Reading Time: **10** minutes Writing Time: **180** minutes

INSTRUCTIONS TO CANDIDATES

EXAM CONDITIONS

This is a CLOSED BOOK examination

Any non-programmable calculator is permitted

No handwritten notes are permitted

No dictionaries are permitted

Answer on the supplied examination material/s only

ADDITIONAL AUTHORISED MATERIALS	EXAMINATION MATERIALS TO BE SUPPLIED
No additional printed material is permitted	1 x 20 Page Book Formula Sheet/s

THIS EXAMINATION IS PRINTED DOUBLE-SIDED.

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Question 1 (15 marks)

The following data are the yields (in pounds) of hops.

3.9	3.4	5.1	2.7	4.4	7.0	5.6	2.6	4.8	5.6
7.0	4.8	5.0	6.8	4.8	3.7	5.8	3.6	4.0	5.6

a) Determine the first and third quartiles of the yields (5 marks)

b) Determine the mid-quartile (5 marks)

c) Determine percentiles, P_{15} and P_{90}. (5 marks)

Question 2 (25 marks)

A bowl contains four kinds of identical-looking, foil-wrapped, chocolate egg-shaped candies. All but 50 of them are milk chocolate, all but 50 are dark chocolate, all but 50 are semi-sweet chocolate, and all but 60 are white chocolate.

a) How many candies are there in the bowl? (6 marks)
b) How many of each kind of chocolate are in the bowl? (4 marks)
c) If one chocolate is selected at random, what is the probability that is white chocolate? (2 marks)
d) If one chocolate is selected at random, what is the probability that is white or milk chocolate? (2 marks)
e) If one chocolate is selected at random, what is the probability that is milk and dark chocolate? (2 marks)
f) If two chocolates are selected at random, what is the probability that both are white chocolate? (3 marks)
g) If two chocolates are selected at random, what is the probability that one is dark and one is semi-sweet chocolate? (3 marks)
h) If two chocolates are selected at random, what is the probability that neither is milk chocolate? (3 marks)

Question 3 **(10 marks)**

For the probability distribution function $P(x) = \frac{x^2+5}{50}$ for x=1, 2, 3, 4, answer the following questions

a) Sketch the histogram. (2 marks)

b) Determine the mean for x=1, 2, 3, 4. (3 marks)

c) Determine the standard deviation for x=1, 2, 3, 4. (5 marks)

Question 4 **(15 marks)**

A radar unit is used to measure the speed of automobiles on an expressway during rush-hour traffic. The speeds of individual automobiles are normally distributed with a mean of 62 mile per hour (mph).

a) Determine the standard deviation of all speeds if 3% of the automobiles travel faster than 72 mph. (5 marks)

b) Using the standard deviation found in part a, determine the percentage of these cars that are travelling less than 55 mph. (5 marks)

c) Using the standard deviation found in part a, determine the 95^{th} percentile for the variable "speed". (5 marks)

Question 5 **(19 marks)**

A random sample of size is to be selected from a population that has a mean μ=50 and a standard deviation of 10.

a) The sample of 36 has a mean value of $\bar{x}$, which belongs to a sampling distribution. Find the shape of this sampling distribution. (1 mark)

b) Find the mean of this sampling distribution (1 mark)

c) Find the standard error of the sampling distribution (2 marks)

d) What is the probability that this sample mean will be between 45 and 55? (5 marks)

e) What is the probability that this sample mean will have value greater than 48? (5 marks)

f) What is the probability that the sample mean will be within 3 units of the mean? (5 marks)

Question 6 **(16 marks)**

Determine the p-value for each of the following:

a) H_o: μ=20, H_a: μ<20; $\bar{x} = 17.8$, σ=9, n=36 (5 marks)
b) H_o: μ=78.5, H_a: μ>78.5; $\bar{x} = 79.8$, σ=15, n=100 (5 marks)
c) H_o: μ=1.587, H_a: μ≠1.587; $\bar{x} = 1.602$, σ=0.15, n=50 (6 marks)

Sample mean:

$\bar{x} = \dfrac{\sum x}{n}$ **(2.1)** or $\dfrac{\sum xf}{\sum f}$ **(2.13)**

Depth of sample median:

$d(\tilde{x}) = (n + 1)/2$ **(2.2)**

Range: $H - L$ **(2.4)**

Sample variance:

$s^2 = \dfrac{\sum(x - \bar{x})^2}{n - 1}$ **(2.6)**

or

$s^2 = \dfrac{\sum x^2 - \dfrac{(\sum x)^2}{n}}{n - 1}$ **(2.10)**

or

$s^2 = \dfrac{\sum x^2 f - \dfrac{(\sum xf)^2}{\sum f}}{\sum f - 1}$ **(2.14)**

Sample standard deviation:

$s = \sqrt{s^2}$ **(2.7)**

Chebyshev's theorem: at least $1 - (1/k^2)$ **(p. 109)**

Sum of squares of x:

$SS(x) = \sum x^2 - ((\sum x)^2/n)$ **(2.9)**

Sum of squares of y:

$SS(y) = \sum y^2 - ((\sum y)^2/n)$ **(3.3)**

Sum of squares of xy:

$SS(xy) = \sum xy - ((\sum x \cdot \sum y)/n)$ **(3.4)**

Pearson's correlation coefficient:

$r = SS(xy)/\sqrt{SS(x) \cdot SS(y)}$ **(3.2)**

Equation for line of best fit: $\hat{y} = b_0 + b_1 x$ **(p. 174)**

Slope for line of best fit: $b_1 = SS(xy)/SS(x)$ **(3.6)**

y-intercept for line of best fit:

$b_0 = [\sum y - (b_1 \cdot \sum x)]/n$ **(3.7)**

Empirical (observed) probability:

$P'(A) = n(A)/n$ **(4.1)**

Theoretical probability for equally likely sample space:

$P(A) = n(A)/n(S)$ **(4.2)**

Complement rule:

$P(\text{not } A) = P(\bar{A}) = 1 - P(A)$ **(4.3)**

General addition rule:

$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ **(4.4)**

General multiplication rule:

$P(A \text{ and } B) = P(A) \cdot P(B|A)$ **(4.5)**

Special addition rule for mutually exclusive events:

$P(A \text{ or } B \text{ or } \ldots \text{ or } E) = P(A) + P(B) + \cdots + P(E)$ **(4.6)**

Special multiplication rule for independent events:

$P(A \text{ and } B \text{ and } \ldots \text{ and } E) = P(A) \cdot P(B) \cdot \cdots \cdot P(E)$ **(4.7)**

Mean of discrete random variable:

$\mu = \sum[xP(x)]$ **(5.1)**

Variance of discrete random variable:

$\sigma^2 = \sum[x^2P(x)] - \{\sum[xP(x)]\}^2$ **(5.3a)**

Standard deviation of discrete random variable:

$\sigma = \sqrt{\sigma^2}$ **(5.4)**

Factorial: $n! = (n)(n-1)(n-2) \cdot \cdots \cdot 2 \cdot 1$ **(p. 289)**

Binomial coefficient:

$\dbinom{n}{x} = \dfrac{n!}{x! \cdot (n - x)!}$ **(5.6)**

Binomial probability function:

$P(x) = \dbinom{n}{x} \cdot p^x \cdot q^{n-x}, x = 0, \ldots, n$ **(5.5)**

Mean of binomial random variable: $\mu = np$ **(5.7)**

Standard deviation, binomial random variable:

$\sigma = \sqrt{npq}$ **(5.8)**

Standard score: $z = (x - \mu)/\sigma$ **(6.3)**

Standard score for $\bar{x}$: $z = \dfrac{\bar{x} - \mu}{\sigma/\sqrt{n}}$ **(7.2)**

Confidence interval for mean, μ (σ known):

$\bar{x} \pm z(\alpha/2) \cdot (\sigma/\sqrt{n})$ **(8.1)**

Sample size for $1 - \alpha$ confidence estimate for μ:

$n = [z(\alpha/2) \cdot \sigma/E]^2$ **(8.3)**

Calculated test statistic for H_o: $\mu = \mu_0$ (σ known):

$z\bigstar = (\bar{x} - \mu_0)/(\sigma/\sqrt{n})$ **(8.4)**

Confidence interval estimate for mean, μ (σ unknown):

$\bar{x} \pm t(\text{df}, \alpha/2) \cdot (s/\sqrt{n})$ with $\text{df} = n - 1$ **(9.1)**

Calculated test statistic for H_o: $\mu = \mu_0$ (σ unknown):

$t\bigstar = \dfrac{\bar{x} - \mu_0}{s/\sqrt{n}}$ with $\text{df} = n - 1$ **(9.2)**

Confidence interval estimate for proportion, p:

$p' \pm z(\alpha/2) \cdot \sqrt{(p'q')/n}, \quad p' = x/n$ **(9.6)**

Calculated test statistic for H_o: $p = p_0$:

$z\bigstar = (p' - p_0)/\sqrt{(p_0 q_0/n)}, \quad p' = x/n$ **(9.9)**

Calculated test statistic for H_o: $\sigma^2 = \sigma_0^2$ or $\sigma = \sigma_0$:

$\chi^2\bigstar = (n - 1)s^2/\sigma_0^2, \quad \text{df} = n - 1$ **(9.10)**

Mean difference between two dependent samples:

Paired difference: $d = x_1 - x_2$ **(10.1)**

Confidence interval for mean, μ_d:

$\bar{d} \pm t(\text{df}, \alpha/2) \cdot s_d/\sqrt{n}$ **(10.2)**

Sample mean of paired differences:

$\bar{d} = \sum d/n$ **(10.3)**

Sample standard deviation of paired differences:

$$s_d = \sqrt{\frac{\sum d^2 - \left[\frac{(\sum d)^2}{n}\right]}{n-1}} \quad (10.4)$$

Calculated test statistic for H_o: $\mu_d = \mu_0$:

$t\star = (\bar{d} - \mu_o)/(s_d/\sqrt{n}), \quad df = n - 1$ (10.5)

Difference between means of two independent samples:

Degrees of freedom:

df = smaller of $(n_1 - 1)$ or $(n_2 - 1)$ (p. 565)

Confidence interval estimate for $\mu_1 - \mu_2$:

$(\bar{x}_1 - \bar{x}_2) \pm t(\text{df}, \alpha/2) \cdot \sqrt{(s_1^2/n_1) + (s_2^2/n_2)}$ (10.8)

Calculated test statistic for H_o: $\mu_1 - \mu_2 = (\mu_1 - \mu_2)_0$:

$t\star = [(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)_0]/\sqrt{(s_1^2/n_1) + (s_2^2/n_2)}$ (10.9)

Difference between proportions of two independent samples: $p_1' q_1' \backslash n_1$

Confidence interval for $p_1 - p_2$:

$$(p_1' - p_2') \pm z(\alpha/2) \cdot \sqrt{\frac{p_1'q_1'}{n_1} + \frac{p_2'q_2'}{n_2}} \quad (10.11)$$

Pooled observed probability:

$p_p' = (x_1 + x_2)/(n_1 + n_2)$ (10.13)

$q_p' = 1 - p_p'$ (10.14)

Calculated test statistic for H_o: $p_1 - p_2 = 0$:

$$z\star = \frac{p_1' - p_2'}{\sqrt{(p_p')(q_p')\left[\left(\frac{1}{n_1}\right) + \left(\frac{1}{n_2}\right)\right]}} \quad (10.15)$$

Ratio of variances between two independent samples:

Calculated test statistic for H_o: $\sigma_1^2/\sigma_2^2 = 1$:

$F\star = s_1^2/s_2^2$ (10.16)

Calculated test statistic for enumerative data:

$\chi^2\star = \sum[(O - E)^2/E]$ (11.1)

Multinomial experiment:

Degrees of freedom: df $= k - 1$ (11.2)

Expected frequency: $E = n \cdot p$ (11.3)

Test for independence or Test of homogeneity:

Degrees of freedom:

df $= (r - 1) \cdot (c - 1)$ (11.4)

Expected value: $E = (R \cdot C)/n$ (11.5)

Mathematical model:

$x_{c,k} = \mu + F_c + \epsilon_{k(c)}$ (12.13)

Total sum of squares:

$$SS(\text{total}) = \sum(x^2) - \frac{(\sum x)^2}{n} \quad (12.2)$$

Sum of squares due to factor:

SS(factor) =

$$\left[\left(\frac{C_1^2}{k_1}\right) + \left(\frac{C_2^2}{k_2}\right) + \left(\frac{C_3^2}{k_3}\right) + \cdots\right] - \left[\frac{(\sum x)^2}{n}\right] \quad (12.3)$$

Sum of squares due to error:

SS(error) =

$\sum(x^2) - [(C_1^2/k_1) + (C_2^2/k_2) + (C_3^2/k_3) + \cdots]$ (12.4)

Degrees of freedom for total:

df(total) $= n - 1$ (12.6)

Degrees of freedom for factor:

df(factor) $= c - 1$ (12.5)

Degrees of freedom for error:

df(error) $= n - c$ (12.7)

Mean square for factor:

MS(factor) = SS(factor)/df(factor) (12.10)

Mean square for error:

MS(error) = SS(error)/df(error) (12.11)

Calculated test statistic for H_o: Mean value is same at all levels:

$F\star$ = MS(factor)/MS(error) (12.12)

Covariance of x and y:

$\text{covar}(x, y) = \sum[(x - \bar{x})(y - \bar{y})]/(n - 1)$ (13.1)

Pearson's correlation coefficient:

$r = \text{covar}(x, y)/(s_x \cdot s_y)$ (13.2)

or

$r = SS(xy)/\sqrt{SS(x) \cdot SS(y)}$ (3.2) or (13.3)

Experimental error: $e = y - \hat{y}$ (13.5)

Variance of error ϵ: $s_e^2 = \sum(y - \hat{y})^2/(n - 2)$ (13.6)

or

$$s_e^2 = \frac{(\sum y^2) - (b_0)(\sum y) - (b_1)(\sum xy)}{n - 2} \quad (13.8)$$

Standard deviation about the line of best fit:

$s_e = \sqrt{s_e^2}$ (p. 715)

Square of standard error of regression:

$$s_{b_1}^2 = \frac{s_e^2}{SS(x)} = \frac{s_e^2}{\sum x^2 - [(\sum x)^2/n]} \quad (13.11)$$

Confidence interval for β_1:

$b_1 \pm t(\text{df}, \alpha/2) \cdot s_{b_1}$ (13.12)

Calculated test statistic for H_o: $\beta_1 = 0$:

$t\star = (b_1 - \beta_1)/s_{b_1}$ with df $= n - 2$ (13.13)

Confidence interval for mean value of y at x_0:

$$\hat{y} \pm t(n - 2, \alpha/2) \cdot s_e \cdot \sqrt{\frac{1}{n} + \frac{(x_0 - \bar{x})^2}{SS(x)}} \quad (13.15)$$

Prediction interval for y at x_0:

$$\hat{y} \pm t(n - 2, \alpha/2) \cdot s_e \cdot \sqrt{1 + \frac{1}{n} + \frac{(x_0 - \bar{x})^2}{SS(x)}} \quad (13.16)$$

Mann–Whitney U test:

$U_a = n_a \cdot n_b + [(n_b) \cdot (n_b + 1)/2] - R_b$ (14.3)

$U_b = n_a \cdot n_b + [(n_a) \cdot (n_a + 1)/2] - R_a$ (14.4)

Spearman's rank correlation coefficient:

$$r_s = 1 - \left[\frac{6\sum d^2}{n(n^2 - 1)}\right] \quad (14.11)$$

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5754
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7258	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7518	0.7549
0.7	0.7580	0.7612	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7996	0.8023	0.8051	0.8079	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9430	0.9441
1.6	0.9452	0.9463	0.9474	0.9485	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9686	0.9693	0.9700	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9762	0.9767
2.0	0.9773	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9830	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9865	0.9868	0.9871	0.9875	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9925	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9959	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	0.9974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9980	0.9980	0.9981
2.9	0.9981	0.9982	0.9983	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986
3.0	0.9987	0.9987	0.9987	0.9988	0.9988	0.9989	0.9989	0.9989	0.9990	0.9990
3.1	0.9990	0.9991	0.9991	0.9991	0.9992	0.9992	0.9992	0.9992	0.9993	0.9993
3.2	0.9993	0.9993	0.9994	0.9994	0.9994	0.9994	0.9994	0.9995	0.9995	0.9995
3.3	0.9995	0.9995	0.9996	0.9996	0.9996	0.9996	0.9996	0.9996	0.9996	0.9997
3.4	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9998	0.9998
3.5	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998
3.6	0.99984	0.99985	0.99985	0.99986	0.99986	0.99987	0.99987	0.99988	0.99988	0.99989
3.7	0.99989	0.99990	0.99990	0.99990	0.99991	0.99991	0.99992	0.99992	0.99992	0.99992
3.8	0.99993	0.99993	0.99993	0.99994	0.99994	0.99994	0.99994	0.99995	0.99995	0.99995
3.9	0.99995	0.99995	0.99996	0.99996	0.99996	0.99996	0.99996	0.99996	0.99997	0.99997
4.0	0.99997	0.99997	0.99997	0.99997	0.99997	0.99997	0.99998	0.99998	0.99998	0.99998
4.5	0.999997									
5.0	0.9999997									

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
−5.0	0.0000003									
−4.5	0.000003									
−4.0	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002
−3.9	0.00005	0.00005	0.00004	0.00004	0.00004	0.00004	0.00004	0.00004	0.00003	0.00003
−3.8	0.00007	0.00007	0.00007	0.00006	0.00006	0.00006	0.00006	0.00005	0.00005	0.00005
−3.7	0.00011	0.00010	0.00010	0.00010	0.00009	0.00009	0.00008	0.00008	0.00008	0.00008
−3.6	0.0002	0.0002	0.0002	0.00014	0.00014	0.00013	0.00013	0.00012	0.00012	0.00011
−3.5	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
−3.4	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002
−3.3	0.0005	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
−3.2	0.0007	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0005	0.0005	0.0005
−3.1	0.0010	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0008	0.0007	0.0007
−3.0	0.0014	0.0013	0.0013	0.0012	0.0012	0.0011	0.0011	0.0011	0.0010	0.0010
−2.9	0.0019	0.0018	0.0018	0.0017	0.0016	0.0016	0.0015	0.0015	0.0014	0.0014
−2.8	0.0026	0.0025	0.0024	0.0023	0.0023	0.0022	0.0021	0.0021	0.0020	0.0019
−2.7	0.0035	0.0034	0.0033	0.0032	0.0031	0.0030	0.0029	0.0028	0.0027	0.0026
−2.6	0.0047	0.0045	0.0044	0.0043	0.0042	0.0040	0.0039	0.0038	0.0037	0.0036
−2.5	0.0062	0.0060	0.0059	0.0057	0.0055	0.0054	0.0052	0.0051	0.0049	0.0048
−2.4	0.0082	0.0080	0.0078	0.0076	0.0073	0.0071	0.0070	0.0068	0.0066	0.0064
−2.3	0.0107	0.0104	0.0102	0.0099	0.0096	0.0094	0.0091	0.0089	0.0087	0.0084
−2.2	0.0139	0.0136	0.0132	0.0129	0.0126	0.0122	0.0119	0.0116	0.0113	0.0110
−2.1	0.0179	0.0174	0.0170	0.0166	0.0162	0.0158	0.0154	0.0150	0.0146	0.0143
−2.0	0.0228	0.0222	0.0217	0.0212	0.0207	0.0202	0.0197	0.0192	0.0188	0.0183
−1.9	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233
−1.8	0.0359	0.0352	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294
−1.7	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367
−1.6	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0.0475	0.0465	0.0455
−1.5	0.0668	0.0655	0.0643	0.0630	0.0618	0.0606	0.0594	0.0582	0.0571	0.0559
−1.4	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0721	0.0708	0.0694	0.0681
−1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823
−1.2	0.1151	0.1131	0.1112	0.1094	0.1075	0.1057	0.1038	0.1020	0.1003	0.0985
−1.1	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170
−1.0	0.1587	0.1563	0.1539	0.1515	0.1492	0.1469	0.1446	0.1423	0.1401	0.1379
−0.9	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611
−0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867
−0.7	0.2420	0.2389	0.2358	0.2327	0.2297	0.2266	0.2236	0.2207	0.2177	0.2148
−0.6	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2483	0.2451
−0.5	0.3085	0.3050	0.3015	0.2981	0.2946	0.2912	0.2877	0.2843	0.2810	0.2776
−0.4	0.3446	0.3409	0.3372	0.3336	0.3300	0.3264	0.3228	0.3192	0.3156	0.3121
−0.3	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3520	0.3483
−0.2	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859
−0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247
0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641